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STUDY PROJECT

DUSTOFF: AVIATION OR MEDICAL EVACUATION?

BY

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DUSTOFF: AVIATION OR MEDICAL EVACUATION?

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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DUSTOFF: AVIATION OR MEDICAL EVACUATION?

CHAPTER I

INTRODUCTION

BACKGROUND

In 1983 after a long debate and much discussion by the Army leadership, the decision was made to form a separate Aviation Branch. Then Army Surgeon General, LTG Bernard Mittermeyer, supported the Aviation Branch formation; however, he contended that Medical Service Corps aviators and their medical air ambulance units should remain under the control of the Army Medical Department (AMEDD).¹ He believed that medical evacuation was a medical function that was most responsive and efficient when retained under AMEDD control. His rationale was accepted by the Army Chief of Staff, General Edward Meyer, and a decision was made in 1983 to implement the Aviation Branch less the AMEDD assets.

For the last six years the AMEDD and the Aviation Branch have debated whether the Medical Service Corps aviators and air ambulance units should be under line or medical control. All Army Surgeon Generals since LTG Mittermeyer, to include the current, LTG Frank Ledford, have strongly supported the proponent view that these assets are a key and integral component in the delivery of field medical support and should, therefore, remain under the control of the Surgeon General. An opponent view is

expressed by many senior officers in the Aviation Branch, who argue forcefully that Medical Service Corps aviators and air ambulance units are aviation first and foremost and would be better managed under the control of the Aviation Branch.

Supporters line up on both sides of this an emotionally charged issue: is DUSTOFF (an acronym referring to all Army aeromedical evacuation units) aviation or medical evacuation?

I intend to review the two most important developments in the medical evacuation function that contribute to our current system: first, a doctrinal development that evolved out of the Civil War; and second, the technological development of the helicopter. After considering these two developments, I have concluded that DUSTOFF is vital to the provision of medical care to the wounded on the battlefield and medical evacuation only emerged as an effective function when placed under the aegis of the AMEDD. I acknowledge that this argument could be examined from other perspectives. However, my review is limited to the historical perspective, because the historical development of medical evacuation has the most potent lessons for organization of medical support.

OVERVIEW

History is filled with examples of neglected medical care to fallen soldiers. The ancients fought man against man, hand-to-hand.² This type of hand-to-hand fighting produced few wounded because most casualties were either killed in combat

or put out of their misery afterwards.³ In fact, in those days care of the wounded was done so poorly that death was a better fate.

For several hundred years, battlefield medical care was the sole enterprise of voluntary civilian associations which were formed to provide humane treatment care for the wounded. Later, these voluntary organizations such as the hospitaliers would assist the staffs of the conflicting forces.

Despite the development of the ambulance corps and doctrine for ways to clear the battlefield in the 1800s, it was not until the 20th century that mortality rates began to decline. Even with the use of motorized transportation in WW I and II the trip over rough and unimproved roads was often traumatic and as damaging as the original injury.

It has only been since the Korean War with the advent of helicopter medical evacuation that patient transport has become timely and much less traumatic to the patient.

A systematic approach to the evacuation of the sick and wounded in the United States was slow to develop. This was primarily due to the fact that until the Civil War, we did not have large armies engaged in conflict. The Indian Wars generated only a few isolated casualties and even the Revolutionary War failed to generate the numbers of casualties that would focus our attention on evacuation of the sick and injured from the battlefield.

It was not until the Civil War with large armies facing

each other that produced the large number of casualties that now mandated a dedicated and organized, disciplined and well trained medical service to quickly collect the wounded, give life saving first aid, and then transport the patient to nearby field hospitals.⁴ It was here that more sophisticated care could be given by trained surgeons, and the patient stabilized for further movement to more capable general hospitals. It was out of the early chaotic failures of the Civil War that led Doctor Jonathan Letterman, Medical Director of the Army of the Potomac to establish a systematic approach to medical evacuation. It is the system devised by Letterman that has served our Army so well that it essentially remains unchanged since the Civil War.

The major improvement of the evacuation system since the Civil War has been the improved means of transporting the injured soldier. It has been the improved transport conveyance, especially the helicopter, that has done much to relieve the suffering and pain as well as save the lives of many wounded soldiers.

ENDNOTES

1. Letter from LTG Mittenmeyer to MG Maddox, Subject: Aeromedical Evacuation And The Role of The MSC Aviator.

2. Surgeon-Major G.J.H. Evatt, Ambulance Organization, Equipment, and Transport, p. 5.

3. Ibid.

4. Miller J. Stewart, Moving the Wounded: Litters, Cacolets, and Ambulance Wagons, U.S. Army, 1776-1876, p. 8.

CHAPTER II

NAPOLEONIC BEGINNINGS

There have been two major developments in the function of medical evacuation that have most significantly contributed to our current system. The first was the development of a doctrine for casualty flow and the second was a technological development, the advent of the helicopter. I will begin by looking at the development of the system of medical evacuation.

The doctrine, tactics, organizational structure and heritage of the United States Army is inextricably linked to the European Armies and so to is our medical evacuation system.

Until the first century, when two armies clashed, fighting was a direct encounter of hand-to-hand combat. Most casualties died immediately; the wounded were slain to relieve their misery.

Among medieval warriors linked by clan or tribe and those who served a feudal lord, there was a mutual expectation of care if wounded.¹ In feudal times a baron, although he claimed the service of his retainer, was obligated to render service by protecting his "man" and no doubt a certain care had to be given to all followers of such a feudal chief.² In reality, the care provided was nothing more than supporting the injured in local homes during convalescence since definitive medical treatment was very limited. Yet, the social contract that a soldier would be provided for if wounded was a powerful factor in the retention of warriors and their courage in battle.

Large standing armies, which resulted from the consolidation of feudal kingdoms, eroded the personal bonds between warrior and knight, and caused the breakdown of soldier support on the battlefield.³ As the size of forces increased, the consequences on the wounded became even greater, with little to offer the rank and file beyond self-care or the good-will of local townsmen.

As primitive means of war gave way to the inventions of cannon fire and firearms, armies grew much larger and battles were fought over broader areas and consequently casualties began to mount.⁴ Prior to the 18th century, medical officers were not even found in the armies except those surgeons who served as the personal body servants of monarchs and nobility.⁵ The rank and file of the Army had to look after themselves or were tended by the local inhabitants or other charlatans, rouges and other camp followers. Simply stated, battle casualties either tagged along with the baggage wagons or were abandoned.⁶ It was clear there was a need for structured combat medical care and evacuation, yet it remained a neglected requirement.

The plight of the wounded was poignantly depicted by the French surgeon Ambroise Pare when in a stable at the siege of Turin in 1537 he found three soldiers leaning against the wall, their faces completely disfigured. They were unable to see, hear, or speak and their clothes were still smoldering with gunpowder that had burned them. An old soldier entered and inquired if there was any hope of curing them. Pare answered

no, whereupon, the old soldier calmly slit their throats. Pare, believing this to be great cruelty, denounced the old soldier for committing such an atrocity. The man simply replied that he prayed to God that if he too were ever in similar circumstances someone would do likewise to him.⁷

The first European monarch to organize help for the wounded soldier was Queen Isabella of Spain who, in 1487, provided bedded wagons to transport battlefield casualties to large hospital tents. Her grandson, Charles V, extended her work by stationing doctors among the rear guard with orders to remove battlefield casualties to a safe place and there dress their wounds. After an engagement, the sick and wounded were dispatched to the baggage train if they were fit for travel; otherwise, they were left behind in the nearest town.⁸ Unfortunately, most commanders remained much more concerned with tactics, troop movement and supply and continued to neglect the wounded, who were an annoyance. As commanders devoted all their energy to fighting the battle, medical organization reached a miserable low. The Duke of Marlborough did reflect concern for the welfare of his troops when, in 1704, he designated areas where the wounded should assemble. Hospital tents were erected a good distance behind the lines and his surgeons waited there until casualties straggled in or were brought by their comrades.⁹ Presumably, many wounded failed to survive to reach the assembly points, since there was no organized system to link these hospitals with the battlefield through medical evacuation.

The first efforts to recognize hospitals as neutral and protected from warfare occurred in 1743. The English led by John Dalrymple, the Earl of Stair, convinced the French led by the Duke de Noailles that hospitals on both sides should be considered as sanctuaries for the sick and mutually protected. This agreement was strictly observed throughout all that campaign.¹⁰ Still, casualties had to reach these hospitals, a feat that made the potential security a minor benefit to many.

Throughout most of the 18th century, few commanders were concerned with the plight of the wounded, and their priority remained on the tactics of the battle at hand. Yet, armies had enlarged. Consequently, the much larger support caravans and field artillery required enormous territory to maneuver and fight, and nothing was allowed to interfere. Casualties were again regarded as a nuisance, and regulations governing their disposal were adopted on that credo.¹¹ As an example, regulations excluded expeditious evacuation of battlefield wounded by requiring surgeons and their ambulances (cumbersome vehicles, known as 'fourgons' and requiring teams of forty horses) to wait 3 miles to the rear of battle, until after an engagement. Hindered by their own weight, obstructed by artillery and other traffic, they never arrived at the battlefield in less than 24 to 36 hours, by which time many casualties were already dead or beyond hope, prey to the camp-followers who swooped down like vultures to strip, rob and mutilate friend and foe, dead or alive.¹²

The chaotic situation affecting the wounded had become completely hopeless until the contributions of two eminent French Army surgeons, the Barons Dominique Jean Larray and Pierre Francois Percy, whose ideas for removing the wounded from the field of battle were so outstanding that they soon prevailed in all the European Continental Armies.¹³

The fact that Napoleon's Army succeeded for so long a time in the face of concentrated and seemingly endless carnage was due in large measure to the inspiration of Dr. Jean Larray.¹⁴ In 1792, after experiencing many years of frustrating delays in his attempts to promptly reach the wounded, he introduced "ambulances volantes" (Flying Field Hospitals) capable of moving from place to place, patterned on the "flying artillery" of the day. These flying field hospitals included ambulance wagons as we know them.

Prior to 1792, "ambulance" had a far different meaning.¹⁵ It had the connotation of an entire hospital that moved along with the armies in the field and organized with the capability to provide surgical care to the wounded.

Larray designed his flying ambulance as a carriage, well sprung and capable of being drawn swiftly like the flying artillery by two to four horses.¹⁶ The French Quarter-Master General procured a few of these conveyances and they saw their first service against the Prussians near Konigsburg. They were a notable success under the most trying conditions of rough mountainous terrain and heavy snow. Here for the first time

Larray was able to dress the wounded in the field of battle before the action broke off and then transport the wounded to safety. This was truly a major advance in casualty collection.¹⁷

Larray had injected an element of compassion into war that had never before been seen. He received support from Napoleon as he awakened mankind's conscience to the inhumanity of war. Larray was therefore free to proceed with the development of organizing the evacuation of casualties and the heart of this organization was the flying ambulance. One ambulance consisted of 340 men supporting three divisions. A chief surgeon was in command and each division consisted of 113 men and twelve light flying ambulances and four of the heavy, cumbersome fourgons that served as mobile depots.¹⁸ His organization further stipulated that the twelve ambulances per division were to consist of eight two wheelers which were designed for use in the flat country and four four-wheeled ambulances which were intended primarily for use in mountainous terrain. His plans for a complete evacuation system organization was brought into a high degree of perfection. He was the first to introduce an ambulance corps, an organization that did not make its way into the American Army until 1862, and this was 1793.

Larray's friend and colleague, Baron Pierre Francois Percy, introduced into Napoleon's Army the first medics, a trained corps of field litter bearers, professional soldiers formed, organized, trained and equipped for the express duty of collecting the wounded while the battle was ongoing.¹⁹

The British, in contrast, were slow to develop an evacuation system and it was not until the 1850s with the disaster of the Crimean War that significant improvement was made in the British Army.²⁰ Tradition-bound, they entered the Crimean War with the practice to evacuate the wounded from battle by using bandsmen as stretcher bearers. (This was the same system adopted by the U.S. Army and carried into the Union Army during the first years of the Civil War) They quickly learned of the superiority of dedicated assets.

In summary, man had spent centuries developing and perfecting the destructive instruments of war and ways to employ them. It was a clear fact that man had succeeded in this endeavor. However it was not until the Napoleonic Wars that any effort was devoted to meet the needs of the soldiers disabled by these new destructive implements of war. This was the first time that a dedicated medical support system had been placed on the battlefield and the results were noteworthy.

ENDNOTES

1. Evatt, p. 6.
2. Ibid.
3. Ibid.
4. Robert G. Richardson, Larrey: Surgeon to Napoleon's Imperial Guard, p. 3.
5. Stewart, p. 11.
6. Richardson, p. 3.
7. Ambroise Pare, Apologie, et Voyages, p. 782.

8. Richardson, p. 3.
9. Ibid., p. 4.
10. Sir John Pringle, Observations on the Diseases of the Army, p. 6.
11. Richardson, p. 4.
12. Ibid., p. 5.
13. Miller, p. 12.
14. Richardson, p. 2.
15. Charles H. Miles, An Historical Outline of Ambulance, p. 7.
16. Richardson, p. 21.
17. Ibid., p. 22.
18. Ibid., p. 34.
19. Miller, p. 16.
20. Miles, p. 22.

CHAPTER III
BIRTH OF A NEW NATION
THE EARLY BEGINNINGS

As we move westward from Continental Europe to the American Colonies of the 17th century, we find a situation less similar to the indifference of continental armies than to the old tribal bonds of warriors. The colonies of this new emerging nation were at peace with the world and had no need for a large standing Army, as it looked to the Mother Country, England, for its protection. The only conflicts were with marauding bands of Indians and even these occasional incidents did present any great concern in the evacuation and care of the wounded because there were few casualties.

Like the European feudal warrior, the Colonial soldier often incurred his injury far from home and if the situation permitted, he would be provided medical care and prepared for the long agonizing trip back to his home base. This could mean travel over great distances and often it took days and even weeks to reach their destination. There was no such thing as an ambulance yet, and the means of transport was very primitive and most frequently was an improvised method of transport such as a travois used by the Indians. Again, on other occasions the wounded soldier may be left in a home at a local friendly settlement to recover. Whatever the circumstance, the care was very rudimentary and recovery a long and painful process.¹

An Army Medical Department was formed during the Revolutionary War and after a period of chaos and adjustment it finally evolved into a fairly effective organization, this despite the fallacies of medical science at the time.² One of the major shortcomings during the war was poorly trained regimental surgeons who received their commissions by buying them. The sick and wounded often went untended for days and there was no system of evacuation in the Continental Army.³

The first use of the "flying hospital" was seen in documents dating from the winter at Valley Forge, however the phrase was casually and imprecisely employed.⁴ These hospitals were merely a series of huts which held those that could be quickly returned to duty or those patients that needed stabilizing before moving to a general hospital. The term certainly did not have the same meaning as Larray's Flying Hospital in Napoleon's Army a few years later. Medical organization remained chaotic. The extent of confusion over patient evacuation was revealed in a letter written by Dr. John Morgan, Medical Director, of the Medical Department, to Congress in July 1776 in which he said, "The regimental surgeons ought to call on the officers of the corps to which they belong, to settle with them, what persons are to be employed in carrying off the wounded, and for a supply of wheelbarrows, or more convenient biers, for conveying them from the field of battle to the place appointed for reception of the wounded, or general hospital."⁵ This clearly shows that medical evacuation was a neglected area for the tactical

commanders.

The numbers of casualties produced during the war remained relatively low because of the type of weapons used and the fact that the contending armies were fairly small. Yet the Continental soldier that became injured was evacuated by an extremely haphazard system. Commanders remained fixated on tactics and paid little attention to the plight of the wounded, who were evacuated by whatever happened to be available. Troop morale continued to suffer because of a lack of confidence in being cared for should he become a casualty. This was very similar to the situation of Napoleon's Army prior to the innovations of Larray. (In fact, it would be some eighty years later during the outbreak of the Civil War before any change occurred in our evacuation system and ambulance service.)

With the war over, the new country felt secure in its status as a nation separated by vast miles of ocean from its nearest adversary. No longer was there any need for a large standing Army and our forces were reduced to a mere 700 soldiers and those were all to be supplied by various state militias.⁶ More importantly, the isolationist attitude of the new nation meant there would be no study of the art of warfare that was undergoing serious change in Europe. It is especially disheartening to note that the innovations of Larray and Percy in the Napoleonic War would remain unknown to the American military for decades to come.

Even though the United States had been anticipating war

with Great Britain for several years before the actual declaration on 18 June 1812, neither the Army nor the organization of the Army's medical support was ready for hostilities when they came.⁷ Indeed, it was nine months after war had been declared before Congress even reauthorized the establishment of a Medical Department!

Once again, it was the fate of the wounded soldier to lay where he fell until one of his comrades could be freed to move him to a collecting point by whatever means happened to be available. Most often the wounded were moved by crudely improvised hand litters made from Army blankets and muskets or the hands of two men clasped together to form a seat. At the collecting point, the patients would then be loaded onto wagons or whatever transportation was available to then move them on to the hospital.⁸ This very crude means of evacuation prevailed in our Army despite the fact that it was some two decades after the introduction of Larray's Flying Ambulance in France. If a patient could survive the trip and reach the hospital, the care was good, but the fact remains that a systematic concept for evacuation had not yet emerged in our Army.

The first attempts to address the problems of the evacuation of sick and wounded occurred in the most unlikely place. It was during the hostilities against the Seminole Indians, in Florida 1835-38, that the wounded were methodically transported for long distances by special ambulance wagons or by

horse-litters. The Medical Director of the troops, Captain Richard Satterlee, organized the personnel as well as the material of the medical field service as systematically and effectively as the desultory nature of the campaign would allow.⁹ In a letter to the Surgeon General dated 5 January 1838, Captain Satterlee described the measures that he took to aid the wounded after the engagement at Okeechobie. He was forced to evacuate the wounded over a distance of 150 miles to the nearest hospital. Using a specially modified wagon and a field constructed two horse litter, he reported the patients were moved over this great distance in a very comfortable manner.¹⁰ This is the first recorded scheme of ambulance administration and equipment in the field service of the United States Army.¹¹

One other development to come out of the Florida campaign was the design of a single horse litter conveyance by a Captain H.L. Thistle. This means of transport was designed to move wounded through the narrowest of defiles or over the worst of ground.¹²

The experiences gained with the war with Mexico, 1846-48, did little to materially provide any improvement for an adequate ambulance service.¹³ In fact ambulance wagons as such were not attached to the American Army although Army regulations did provide that a wagon be attached to the rear guard of a regiment for the accommodation of the sick and wounded and when necessary and practicable, the surgeons could render whatever assistance they deemed necessary to alleviate the pains of the wounded.¹⁴

A MODEST STEP

The period after the Mexican War and prior to the outbreak of the Civil War was one marked by a renewed interest in the study of the Art of War, especially European Armies. A military commission was appointed, headed by Major Richard Delafield and Captain George B. McClellan to study first-hand warfare in Europe. The observations of this commission, including first-hand accounts of the Crimean War were published in two reports and covered a number of areas to include ambulance trains.¹⁵ According to Major Delafield the most expeditious means of transport with the least number of animals, wagons and attendants combined with the greatest comfort for the wounded soldier was the number one principle. A second consideration was that the design of ambulance transports should be such that they can be used on any battlefield whether at the bottom of a valley, a steep slope, in a ravine or over ploughed ground and still transport the seriously wounded with ease and comfort.¹⁶

In 1859, the Secretary of War convened a board headed by the Surgeon General, Clement A. Finly, to study the various models of ambulances that had been proposed and revise the supply table. The board recommended that a trial be made of both two and four-wheeled ambulances and also reported a plan for an ambulance system for troops serving in the field. As warfare then was only with Indians, that was what the board had in mind in recommending the following allowances for

ambulances:

°For less than five companies: one two-wheeled ambulance per company.

°For five companies: one four-wheeled and five two-wheeled ambulances.

°For a regiment (10 companies): two four-wheeled and five two-wheeled ambulances.¹⁷

These recommendations were to be published as Revised Army Regulations in 1861. Although the types of ambulances recommended did not prove on trial to be the best possible and both types were abandoned fairly early in the Civil War, the Army entered the war with ambulances which proved a great help to the Medical Department as well as the sick and wounded.¹⁸ So for the first time in our history some attention was focused on an ambulance system to help improve the plight of the wounded soldier. Even though these steps were rather modest, it was at least a step in the right direction. The stage was now set for the bloodiest war in our history and the engagement of two large armies on American soil now mandated a system that could effectively address the wounded soldier.

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1. Louis C. Duncan, Medical Men In The American Revolution 1775-1783, p. 7.

2. James A. Tobey, The Medical Department of the Army, p. 4.

3. Mary C. Gillett, The Army Medical Department 1775-1818, p. 21.

4. Ibid., p. 88.

5. Duncan, p. 121.
6. Tobey, p. 7.
7. Gillett, p. 148.
8. Stewart, p. 23.
9. George A. Otis, Transporting of Sick and Wounded by Pack Animals, p. 3.
10. Ibid., p. 4.
11. Ibid., p. 5.
12. Ibid.
13. Stewart, p. 24.
14. The Surgeon General's Office, The Medical and Surgical History of the War of the Rebellion, 1861-65, p. 944.
15. Stewart, p. 26.
16. Richard Delefield, Report on the Art of War in Europe, p. 68.
17. P.M. Ashburn, A History of the Medical Department of the United States Army, p. 63.
18. Ibid.

CHAPTER IV
THE DEVELOPMENT OF A SYSTEM
CHAOTIC BEGINNINGS

Although the Civil War had been envisaged for a long time, when the Confederate guns fired on Fort Sumter 11 April 1861 the country was plunged into a war it was totally unprepared for.¹ The Army Medical Department was equally unprepared to cope with the demands which a major battle would make upon it.² The politicians and a clamoring public impatiently wanting offensive movement, and confident of an early and decisive Union victory, forced Brigadier General Irwin McDowell to leave Washington on July 16, 1861 (to teach the Confederates a lesson). General McDowell realized the Union Army was not trained and ill-prepared for war, however he had no choice and the First Battle of Manassas, 21 July 1861 served only to reinforce those convictions. The entire Union Army demonstrated a total lack of preparedness for battle and nowhere was the lack of preparation more evident than the Army Medical Department. It was without a system to include organization, personnel, equipment and training to remove the wounded from the battlefield and to provide hospital treatment in a field setting.

The First Battle of Manassas clearly illustrates the historical neglect of large standing armies to casualty evacuation and most importantly, resource allocation to that function. The evacuation of the wounded at Manassas was an

improvised system at the regimental level characterized by a lack of ambulances, especially of the four wheeled type. The drivers and stretcher bearers were untrained, unmotivated, bandsmen and sometimes it was necessary to threaten to shoot the drivers in order to get them to even take ambulances onto the battlefield.³ This evacuation system was so inadequate that casualties came to depend upon friends and relatives to pick them up. In the months to come, the family carriage became a symbol of both hope and despair for the wounded soldier.⁴

At the start of the War, the procurement and management of ambulances was a Quartermaster function. The pathetic state of ambulances on hand at this time clearly reflects the low priority given to this function when someone other than the Surgeon General is responsible for these resources. No one knows the exact number of ambulances that accompanied the Army of the Potomac into battle at Manassas, but the best record indicates possibly fort-eight.⁵ This small contingent contrasts with Army Regulation 1330, dated 1861, which stipulates there should have been 56 four-wheeled ambulances and 280 two-wheeled ambulances to support the approximate 28 regiments that went into battle.⁶ (As a matter of record, not one wounded soldier appears to have reached Washington directly from the field via ambulance.)⁷

Following Manassas, there was little improvement in the Medical Department of the Army. The provision of medical care was hampered by the lack of a division or brigade hospital and none was even contemplated. Medical care consisted of a small

regimental aid station at the front and base hospitals (old buildings) at the rear and little else.⁸ Each regiment had a surgeon, an assistant surgeon, a hospital steward, an orderly for each medical officer and a few men detailed from the line to work as cooks and nurses.⁹ As previously indicated, all ambulance corpsmen were musicians, detailed from the regimental band and held in the rear until after the battle. History reveals that no bandsman was ever cited for noteworthy service as an ambulance driver.¹⁰ The few ambulances available were described as poor carriages which a perfectly healthy man would find exceedingly uncomfortable to drive in, even for a few miles, and often driven by a driver not the most humane in the world.¹¹

It was against this background of horror experienced by the sick and wounded during the first months of the Civil War that made the need for change in leadership, organization, and operations of the Medical Department of 1862 an undeniable fact. Once an Army has been committed to battle, no medical function is more important than the care of the wounded. In April 1862, William Hammond was appointed as the new Surgeon General, replacing the ageing Clement L. Finly. Hammond brought youth, energy and tremendous administrative skills to the new job which paid immediate dividends.

Although the first and most important organizational step, the appointment of a medical director for each Army of the Union forces occurred before the First Battle of Manassas, chaos still reigned. Surgeon Charles Tripler, Medical Director of the Army

of the Potomac in responding to a request for an ambulance corps wrote to Surgeon General Finly on March 4, 1862, "I have the honor to report, however desirable a regularly organized ambulance company may be for an Army, it is now too late to raise, drill and equip so elaborate an establishment."¹² This was simply incredible and the lack of an ambulance corps was to mean unnecessary suffering and death for thousands before it was finally established.

Hammond was not pleased with the work of Tripler as the Medical Director of the Army of the Potomac and consequently, he removed him on 4 July 1862 and replaced him with Dr. Jonathan Letterman. In his letter of appointment, Hammond charged Letterman with the task of arranging for the safe, effectual, comfortable, and speedy transportation of the sick and wounded from the battlefield.¹³

This was indeed a time of crisis for the Medical Department and as so often happens in history, the right man, for the right job, at the right time seem to inexplicably come together for historic and enduring purposes. So it was with Jonathan Letterman.

ORDER OUT OF CHAOS

In Dr. Letterman were found the courage and the clear perception to devise and adapt a system for the organization of the Medical Department which interfered in no manner whatever with the military authority of any commander, and which utilized

in a most practical way the material at hand.¹⁴ He was the first to declare that field medical service included the efficient and coordinated use of the functions of medical treatment, medical evacuation and medical supply. (Although Letterman made significant contributions in all three areas, in this discussion I will only review medical evacuation.)

Letterman's first great work was the introduction of system, order, and efficiency into the evacuation of the wounded. He immediately recognized that control of ambulances under the Quartermaster Corps was a major problem and the Medical Department must have control of the ambulances and medical transport.¹⁵ It was his strong conviction that without AMEDD control of these resources, they would always be used for something else when resources became constrained. Letterman was equally convinced that the Army must have an ambulance corps, an idea probably based on his studies of the French surgeon Larray. He quickly formulated a complete and effective plan for an Ambulance Corps which was at once approved by General McClellan and published in General Orders dated August 2, 1862.¹⁶

The concept developed by Letterman has remained the doctrinal basis for medical evacuation even until today. His plan authorized each Army Corps to have its own ambulance corps under the control of the Medical Director of the Corps, who in turn worked directly for the Corps Commander. This organization put ambulances under the control of the Medical Department and has served as an inviolable rule in providing

medical evacuation ever since. The ambulance corps would be divided and function at each level of the Army corps, e.g. division, brigade and regiment. All officers were forbidden to use ambulances or to permit them to be used for other than their intended purposes.¹⁸ Intended purposes did include transport of medical supplies in emergency situations. This again illustrates the point that ambulances have a tendency to be reallocated when left unchecked by medical authority.

The personnel detailed to serve in the ambulance corps were to be efficient and fit for this type of service and most importantly they were to receive extensive training in appropriate evacuation procedures, along with training in maintenance and medical supplies and equipment. Another feature of the ambulance corps was distinctive uniforms so they could be easily recognized on the battlefield. Letterman's special order stated, "No person will be allowed to carry from the field any wounded or sick except this corps."¹⁹

Other essential features of the ambulance corps were:

°An ambulance corps for each Army corps, commanded by a captain.

°A first lieutenant for each division, a second lieutenant for each brigade, and a sergeant for each regiment.²⁰

The order further established bases of issue for ambulances with the number of ambulances depending on the size of the regiment. There would be three for a regiment of 500 or more, two for smaller regiments, and one for a battery or similar organization. The actual number was about one per 150 soldiers.²¹

Each ambulance was to carry two stretchers and have two attendants and a driver. Each regiment was to have a transport cart with a driver for supplies and equipment. Two Army wagons assigned to each division were to carry medicines. The ambulances of each division, about 30 in number, were to be kept together on the march, with the medical wagons in the rear of the ambulances for each brigade. The ambulance train was to precede all wagon trains. In camp the ambulances and carts were to be parked by divisions, and subject to requisition by regimental officers. The medical director of the Army corps was made responsible for the distribution of ambulances and medical wagons previous to or in time of action, issuing orders through the captain of the ambulance corps. The first lieutenant had control of all ambulances and carts in the division and was under the direction of both the medical director of the division and of the captain of the ambulance corps with the Army corps.²²

A SYSTEM THAT WORKS

The first test of Letterman's new plan came at Antietam (September 17, 1862) and in that battle his system proved its efficiency. One must keep in mind that this was a mere two months after he became Medical Director of the Army of the Potomac. In the Battle of Antietam, called the bloodiest battle of the Civil War, the ambulance corps evacuated over 10,000 wounded soldiers within 24 hours. Many ambulance corpsmen proved themselves courageous beyond the call of duty when they snatched

fallen comrades practically from under the muzzles of Confederate guns. This was a key point, for it was the first time that medical personnel had distinguished themselves in battle. This illustrated the importance of dedicating personnel for the medical evacuation function who, when put into units, given proper training on their mission, and provided competent leadership, would respond to the call of duty. This was a simple fact known by the infantry and other combat arms for centuries. It was not until Antietam that we learned this simple lesson, but medical corpsmen and medical evacuation personnel have developed a strong sense of selfless service that has since nobly served the American soldier. The outstanding success of the evacuation system at Antietam was unparalleled and was hailed as an unqualified success by all observers.²³ Letterman had finally put forward a system of evacuation that brought order out of chaos. Again, some thirty days later at Fredericksburg the newly created ambulance corps proved so successful that the stretcher bearers and ambulances brought out the wounded faster than they could be cared for.²⁴ The evacuation system (ambulance corps) continued to perform quite well and built up to a strength of over 1,000 ambulances and approximately 3,000 ambulance drivers and stretcher bearers. In fact it was recorded that the ambulance and litter bearers work approached perfection despite over 15,000 wounded at Gettysburg.²⁵

Throughout the remainder of the Civil War, Letterman's concept became the standard and there arose much public clamor

led by civilian medical societies to establish by public law an ambulance service for the Army. This effort was headed by a Dr. Bowditch, a civilian doctor, who lost a son during the Civil War - a death he contended was a needless loss due to a poor evacuation system. Bowditch published a pamphlet entitled, "A Brief Plea for an Ambulance System," which was printed in leading newspapers of the country and helped develop strong public sentiment for Congressional action to establish an ambulance corps.²⁶ Senator Harry Wilson of Massachusetts, Chairman of the Military Affairs Committee, sponsored a bill which passed both houses of Congress and became law on March 11, 1864. The principles of the Letterman plan and the Ambulance Corps Act of 1864 formed the basis of ambulance organization of most of the armies of the world down to World War I.²⁷

It has been on those plans that our current organization for evacuation during combat has been built. The changes that have since been made in plans since the Civil War are those of a more complete organization to meet modern conditions brought on by the stimulus of new inventions, better transport capabilities and the discoveries of science.²⁸ As an example, we have developed a corps evacuation system both for tactical aeromedical evacuation, the movement of patients within the combat zone, as well as a strategic (Air Force) aeromedical evacuation system to move patients from the combat zone to the communications zone. It was Letterman that developed a system of field medical support based upon the principle of echelonment

and a system of medical evacuation to move patients between the echelons of medical care. This has evolved into the current system of field medical support that incorporates four echelons of medical support:

°Unit level medical support - battalion aid stations which includes ambulances of the medical platoon.

°Division level medical support - medical company of divisional medical battalion or medical company of forward support battalion or main support battalion and the medical company includes ambulances of the ambulance platoon.

°Corps level medical support - includes mobile army surgical hospitals, evacuation hospitals and corps ambulance units to include both air and ground companies and detachments.

°Communications zone level medical support - general hospitals, CONUS hospitals and Air Force strategic aeromedical evacuation aircraft.

This system of echelonment provides that the sick and wounded soldier is evacuated through a progressive system of medical care from lower (less capable) to higher (more capability) until the patient reaches the point in echelonment that his injury or sickness can be definitively treated.

Jonathan Letterman was truly a man of history who left an indelible mark on the Army medical evacuation system. His principle of a dedicated medical evacuation system staffed with highly trained personnel and controlled by the Army Medical Department has led the United States Army to be recognized as having one of the finest evacuation systems in the world today.

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CHAPTER V
TECHNOLOGICAL ADVANCEMENT
THE BEGINNINGS OF THE AIRPLANE

Clearly the system of evacuation that has become a basic tenet of our field medical support doctrine was developed by Letterman and doctrinally it has changed little since the Civil War. The only changes that have occurred have been those associated with technological advances. The most remarkable of those technological advances has been the ambulance itself which has gone from the single horse litter to the UH-60 Blackhawk helicopter. It has been the helicopter that has provided the single greatest improvement in medical evacuation beyond the system of evacuation that was developed by Letterman. How did we get to where we are in the use of this marvelous machine that would surely be the envy of the French pioneers Larray and Percy?

Ironically, the French used hot air balloons to evacuate 160 sick and wounded patients from Paris during Bismark's siege in 1870.¹ This was the first recorded use of an air conveyance as an ambulance. It was only seven years after the Wright brothers' first successful flight in 1903 that an airplane was designed for transporting patients. In 1910 Captain H.R. Gosman, MC and Lieutenant H.L. Rhoades flew an air ambulance of their own design and construction. They reported the results to the War Department and requested funds for improvement of the

airplane but were quickly rebuffed by the War Department.² It was only two years later that the Surgeon General recommended to the War Department that specially designed aircraft be used for evacuation purposes, but again this plea fell on deaf ears. Airplanes of that day were not considered a safe means of transport and it was felt they needed significant improvement.

During World War I the airplane was used very spasmodically to evacuate patients. Again the French pioneered the use of this vehicle. Their greatest use was in 1915 in Albania but it did not prove to be reliable to the rigors of the Western Front.³ In 1918 the French converted sixty-four Dorland A.R. 11 fighters into air ambulances which were subsequently used in Morocco in France's war against Riffian and Berber tribesman in the Atlas Mountains.

By the end of World War I the U.S. Army had also begun to re-examine its position on air ambulances. In 1920 the first U.S. Army plane with a fuselage designed primarily for transportation of the sick and wounded was built and flown at McCook Field, Ohio. The DeHavilland DH-4A had a space for a pilot, two litter patients, and a medical attendant. Several of these were used in operations on the Mexican border.⁴

The Medical Field Service School, then located at Carlisle Barracks, Pennsylvania, also experimented with aircraft for use in patient evacuations when in 1936 it field tested an autogyro as a forward evacuation vehicle.⁵ Again it was the French that had pioneered the autogyro concept and provided

the United States with its first sample of an autogyro in 1928. The United States subsequently designed an autogyro for evacuation which would carry a pilot and three patients. When field tested in 1936, the idea showed a lot of promise but Army budgetary problems precluded funding for a rotary-wing medical evacuation unit.⁶

NEW PROMISE OUT OF WORLD WAR II

World War II brought the first widespread use of the fixed-wing airplane for aeromedical evacuation purposes. Movement of casualties in the forward combat zone was seriously limited by the availability and capabilities of existing aircraft. However the L-4 and L-5B aircraft were used fairly extensively and during the course of the war over one million soldiers had been evacuated via aircraft.⁷ It should be noted that most of these evacuations were strategic rather than tactical evacuations and were accomplished with standard cargo aircraft without modification to medical evacuation specifications. So the primary focus of air evacuation during this time was long range (strategic) rather than tactical.

It is worthy to note that the British under the command Sir Willian Slim used the L-5 aircraft for extensive air evacuations in the China-Burma-India (CBI) Theater. Of interest, Slim used the L-5 for tactical evacuation. These small aircraft picked up casualties on air strips that had been hurriedly cut out of the jungle or rice fields within a mile or two of the

fighting. Each of these aircraft had the capability to carry one litter and two ambulatory patients. They would be moved some ten to forty miles to the rear to a larger supply airstrip. Here the casualties were transferred to large Dakota aircraft returning empty from the supply run and flown directly to a general hospital. Sir William Slim stated in his book Defeat Into Victory, "Air evacuation did more in the Fourteenth Army to save lives than any other agency."⁸ This was a moving testimony to a fledgling concept and one that was to be repeated by General William Westmoreland in Vietnam as tactical aeromedical evacuation reached its high water mark.

THE INVENTION OF IGOR SIKORSKY

Since the time of Leonard da Vinci, man had dreamed of an aircraft that could take off and land vertically. So, on April 20, 1942, Igor Sikorsky staged a successful flight demonstration of his helicopter.⁹ It was Sikorsky's success that would ultimately redefine the Army aeromedical evacuation system of the future, but progress was slow in coming. At least we now had the capability to evacuate by air means from the forward areas of battle.

In early 1943 a proposal to organize helicopters into air ambulance units was submitted to the Air Surgeon. But the personnel involved could not reach a decision on whether to transport patients internally or externally in pods. The urgent wartime need for materials for other purposes caused the project

to die a slow death.¹⁰

Although no formal medical evacuation units were organized, the helicopter did manage to prove its value as a device for rescue and medical evacuation from the forward combat areas. The first recorded medical evacuation mission flown by a helicopter was performed in April 1944 by Lieutenant Carter Harmon, one of the first Army Air Forces' pilots trained in helicopters at the Sikorsky plant in Bridgeport, Connecticut. He was assigned to the 1st Air Commando Group, U.S. Army Air Forces, India. It was on April 24 that he took one of his units' new litter bearing Sikorskys to pick up a stranded party with casualties about twenty-five kilometers west of Mawlu, Burma, thus successfully accomplishing the first helicopter medical evacuation.¹¹ It is fitting that the first mission was flown in the jungles of Northeast Asia as some twenty years later helicopter medical evacuation would reach the pinnacle of its legendary success in the jungles of Vietnam. Colonel Cochran, the commander of the 1st Commando Group was an enthusiastic supporter of the helicopter for medical evacuation and routinely used the R-4 for this purpose. However his support was isolated and the helicopter was never used for medical evacuation to a large extent during the remaining period of the war.¹² It remained to the more conventional means to accomplish most of the evacuation from the front lines in World War II. Although most of the more than one million patients transported by aircraft during the war were by fixed-wing and were merely

transports from frontline hospitals to restorative and recuperative hospitals in the rear, some startling statistics were revealed. During World War I the death rate among the wounded was 8.5 percent/1,000 wounded but in World War II, this rate fell by fifty percent to 4.5 percent/1,000 wounded. Aeromedical evacuation along with the use of whole blood products and antibiotics were among the three greatest aids in achieving this amazing reduction.¹³

SLOW GROWTH

The post war period was a turbulent time for the Army as it saw a tremendous reduction in size and a heated controversy over the emergence of the newest military service, the United States Air Force. The stimulus to develop an organized aeromedical evacuation capability quickly died with the last shots of the war. As the budget began to dwindle, there was extreme competition for the limited organic air support available which pushed medical evacuation far down the ladder of priority.

Finally the National Security Act of 1947, in addition to establishing the United States Air Force as the newest service, also clearly defined the roles and missions for each of the services. This act made the Army responsible for, "Aeromedical evacuation within the Army Combat Zone to include battlefield pickup of casualties (except those from an airhead or airborne objective area which is supported by Air Force air landed logistical support), air transport to initial point of

treatment and any subsequent moves to hospital facilities within the Army combat zone."¹⁴ This was an important step because these words clearly gave the mission of frontline medical evacuation to the Army and not the Air Force. However the caveat to this was that the Army still had to procure the equipment to effectively perform this new mission.¹⁵

On September 7, 1949 the Secretary of Defense directed that the evacuation of all sick and wounded in peace and war would be accomplished by air as the method of choice.¹⁶ By this time helicopter development had made significant progress and several types were now available. In the summer of that year, a test board was convened at Fort Bragg to conduct tests and make recommendations relative to medical evacuation by helicopter. The test used an early Sikorsky H-18 helicopter that was capable of transporting internal litters and a medical attendant in addition to the pilot. After some extensive tests the board concluded that helicopter evacuation was both feasible and desirable and concluded with some specific recommendations. However the organized use of helicopter ambulances and the development of a real aeromedical evacuation capability by the Army was delayed until the onset of the Korean War.¹⁷

The calm of peace was shattered on 25 June 1950 as North Korean troops spilled across the 38th Parallel and invaded the Republic of Korea. Helicopter medical evacuation in Korea evolved out of circumstances such as the tactical situation, limited highway net, rough roads and mountainous terrain which all made

ground evacuation very difficult. Evacuation distances to Mobile Army Surgical Hospitals (MASH) were the shortest in history as the Eighth United States Army, Korea (EUSAK) Commander, LTG Walker directed his senior surgeon to place these hospitals only five to forty kilometers behind his front lines.

The Eighth Army developed an interest in the success of the Air Forces' 3d Air Rescue Squadron.¹⁸ As the result of a successful joint Army and Air Force test of the concept of helicopter evacuation in August 1950, the Army Surgeon General urgently requested the Department of the Army to send a substantial number of helicopters to Korea for use in medical evacuation. In November 1950 the Second Helicopter Detachment arrived in Korea to be used for medical evacuation. The H-13s had to be modified to carry external litters and became operational on 1 January 1951, some six months after the Air Force had completed its first evacuation mission.¹⁹ The first Army evacuation mission in Korea was flown on 3 January 1950. The Third Helicopter Detachment arrived in Korea and became operational later in January 1951. The Fourth Helicopter Detachment arrived and was operational in March 1951. The First Helicopter Detachment which arrived in Korea in February 1951 never became operational because tactical commanders made the decision to transfer all of its aircraft to other nonmedical units.

The three operational medical evacuation helicopter detachments had eleven aircraft and were assigned to the 8055th

Army Unit, Eighth Army Flight Detachment. They were further attached to forward surgical hospitals (MASH) but were under the operational control of the Eighth Army Surgeon. Most often one helicopter would then be positioned forward with the division clearing station where it was within two miles of the front lines. During their first six months of operation, these eleven helicopters flew 1,985 patients, a remarkable achievement since each helicopter could only carry one to two patients per sortie.20

Medical evacuation helicopter operations certainly experienced their share of growing pains. The use of these machines for frontline evacuation was an untried operation and the pilots simply had to learn by trial and error. There was misunderstanding by ground forces as to what these machines could do and it took some time before they fully understood the capabilities and limitations of helicopters. Generally ground forces did not realize the extreme vulnerability of helicopters. They lacked the speed and power to fly at higher altitudes, thus increasing their vulnerability to enemy ground fire. Complicating this mission was the fact there was a shortage of helicopters in Korea and the Eighth Army ordered that these craft not be used on missions involving danger from the enemy. This fact presented a problem for Army aeromedical evacuation, because the unarmed nature of their mission was inherently more dangerous than most.

Certain expedients were adapted for helicopter evacuation.

Plastic bags were used to keep the patients warm (patients were carried externally). Flexible tubes were fitted from the engines to heat the patient in flight. Covers for the pods were devised to keep the wind off the patients' face. One of the serious limitations of this early medical evacuation helicopter was the fact that no enroute medical care could be provided to the patient, although a mechanical device was developed which permitted plasma to be given in flight.

Even with all these limitations the helicopter of Korea proved to be a quantum leap forward in medical evacuation. The smooth ride and rapid arrival at a clearing station or hospital significantly reduced the mortality rate to 2.5 percent/1,000 wounded in Korea which was a fifty percent reduction over World War II.²¹ The helicopter made the greatest contribution to this reduced mortality as approximately twenty percent of all casualties were evacuated by helicopter. The three Army aeromedical evacuation units, with its eleven helicopters, flew over 21,000 patients during the war.²²

Besides frontline evacuations, air ambulance helicopters also flew a few other medical support missions. By 1951 they were routinely transporting whole blood to the surgical hospitals. This proved extremely valuable because whole blood tended to break down prematurely of clot when carried by surface vehicles over the rough Korean roads. The faster means of transport also allowed blood storage and refrigeration to be centralized rather than dispersed close to the front. The

helicopter backhauled some critical patients from the surgical hospitals to airstrips for further evacuation by Air Force aircraft to general hospitals in Japan. On a few occasions they even backhauled patients to hospital ships along the coast. Navy hospital ships had been modified with helicopter landing pads. The air ambulance detachments were a tremendous morale boost to the fighting soldier because of the reassurance that if he were to become injured, medical help was only a short ride away.

As the ambulance of the air was proving its usefulness in the "Land of the Morning Calm," the Army Surgeon General was busy making efforts to establish a specific Table of Organization and Equipment (TOE) for aeromedical evacuation units. Based on the Korean experience, decisions were made in favor of the small cellular detachment rather than the larger self-sufficient company organization which was adopted by cargo transportation helicopter detachments. So in August 1952, Department of the Army authorized the Helicopter Ambulance Unit, TOE 8-500 or cell RA. This detachment was comprised of five helicopters, seven Medical Service Corps officer pilots, and essential supporting personnel and equipment.²³ With only minor modifications, over the years, this unit still serves as the backbone of our aeromedical evacuation fleet even today.

In December 1952, the operating detachments in Korea were reorganized under TOE 8-500 and were designated Medical Detachments, Helicopter Ambulance, and became medical units

for the first time.²⁴ Although evacuation units became medical detachments at this time, the first Medical Service Corps pilots were not trained until 1953 and did not arrive in Korea until one month after the end of hostilities. During the entirety of war, aeromedical evacuation missions were flown by line pilots of the other branches of the service, however, keep in mind that the aeromedical evacuation units were under the direct control of the Eighth Army Surgeon, thus adhering to Letterman's principle of AMEDD control.

Army interests in aeromedical evacuation were not merely limited to the happenings on the Korean battlefield. The Army's recognition of the growing role of Army Aviation and its medical evacuation potential was recognized on 17 October 1952 when the Army directed the Surgeon General to establish an agency to supervise and coordinate all functions related to Army Aviation. On 6 November 1952 the Aviation Section in the Medical Plans and Operations Division of the Army Surgeon General's Office was established. This staff agency redesignated the Aviation Branch was responsible for;

- °The overall supervision and coordination of functions of the Army Surgeon General relating to Army Aviation.

- °Furnishing technical advice to the Department of the Army on medical matters pertaining to Army Aviation.

- °Evaluating aircraft ambulance unit requirements for current and planned operations and making recommendations on total numbers of units to be used in mobilization planning.²⁵

The Army Surgeon General's strong advice to the Army leadership was that all aircraft designed, developed, or accepted

for the Army be chosen with a view toward patient use as air ambulances. This advice was heeded as the Army opened design competition in January 1955 to select the new standard Army utility helicopter. This was necessitated by the recognized shortcomings of the H-13s and H-5s during the Korean War. Each of the various design proposals was subjected to complete medical evaluation before being considered for any of the primary functions of the aircraft. So much emphasis was placed on the aeromedical evacuation function that the winning proposal (Bell's UH-1) has frequently been referred to as a "helicopter ambulance" in spite of the fact that it was a general purpose utility helicopter capable of supporting a variety of functions.

Unlike forward air evacuation in World War II, the achievements and potential of helicopter air evacuation realized in Korea could not be ignored after the war. The Army Surgeon General's Office applied itself to assessing the potential of helicopter ambulances in future conflict. Surgeons realized that the mortality rate of patients that reached their hospitals had gone about as low as it could. The only hope for further reductions lay in improved medical evacuation from the forward combat areas. As we shall see that objective was realized in the mountains and jungles of South Vietnam.

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CHAPTER VI

HELICOPTER MEDICAL EVACUATION REACHES MATURITY IN VIETNAM

THE 57TH MEDICAL DETACHMENT: THE ORIGINALS

Helicopter medical evacuation grew to its full maturity during the Vietnam War. There were several factors that contributed to the rapid development of the use of helicopters as medical evacuation ambulances. These included the jungle environment of Vietnam with its limited road network, but most especially the guerrilla nature of the Viet Cong warfare. The allied forces were engaged in a new kind of warfare without the traditional front lines and against an enemy that was elusive and seldom seen. The factors of terrain and the type of war when coupled with an existing air medical evacuation capability quickly proved that tactical air medical evacuation was valuable and an essential requirement for supporting medical evacuation of the sick and wounded.

An important lesson began to emerge as the Vietnam War moved from its infancy to full U.S. involvement. Army aeromedical evacuation got off to a slow start because of few casualties in the early stages and the combat units lack of familiarity with the aeromedical evacuation mission. There was some concern that these assets were not being fully utilized and maybe they should be incorporated into the general aviation assets and utilized for other tasks with medical evacuation as a secondary

mission. The lesson learned, although already known by the AMEDD, was that Army aeromedical evacuation must have the flexibility to respond when called. This mission is time sensitive and requires immediate response. This contrasts to troop lift and logistical support missions which can be planned for in advance and maximize aircraft efficiency. The Vietnam War eventually proved that quick response to patient movement directly contributed to saving many lives which would have otherwise died in any other war.

In 1961 President John F. Kennedy took the first of a number measures that would draw the United States deep into the stormy politics of Southeast Asia. As President Diem of South Vietnam saw the steady collapse of his country in the face of a Viet Cong offensive in the summer of 1961, President Kennedy was faced with a difficult situation. He could either watch an old ally collapse or find some way of helping Diem fight the Viet Cong. On 11 December 1961 the first direct United States military support arrived in South Vietnam. This was followed by additional units in February 1962.¹

As the presence of U.S. soldiers began to increase so did the number of casualties, both U.S. and South Vietnamese. So the first air ambulance unit of the U.S. Army was ordered to South Vietnam. The 57th Medical Detachment (Helicopter Ambulance) arrived in April 1962 where it remained throughout the remaining eleven years of the conflict.² When the unit arrived it had five UH-1 helicopters (organized under the same TOE that was

established during the Korean War) and set up operations in Nha Trang along with the 8th Field Hospital. The 57th was a new unit in-country, little known and for the most part with little to do. In fact by the end of June the unit had only evacuated twelve American and fourteen South Vietnamese (ARVN) soldiers. There was a growing feeling among other Army aviators that because of the relatively few hours being flown by the 57th the red crosses should be removed and general support aviation tasks assigned to idle medical evacuation aircraft.³

A more serious danger to the future of air ambulance evacuation began to emerge in 1962. As I have discussed, during the Korean War, ambulance helicopters had served under the direct control of the Eighth Army Surgeon, further attached to the forward surgical hospitals. This supported the basic tenet developed by Letterman that evacuation was a medical function and should be controlled by the Surgeon. However, in September 1962, BG Joseph Stilwell Commander of the Army Support Group Vietnam (USASGV), considered ending this policy in Vietnam by transferring control of the 57th from the AMEDD to the Army Transportation Corps, which then controlled all other Army helicopters in Vietnam. He felt as many current Aviation Branch officers do that aeromedical evacuation was aviation and should be put under the same control as all other helicopters at that time. It fell to Captain John Temperelli, Commander of the 57th and LTC Carl Fischer, USASGV Surgeon to go to BG Stilwell and try to convince him this was a bad idea. They pointed out to

BG Stilwell that Army aeromedical evacuation was a primary tenet in the provision of field medical support. Timely evacuation was the key to providing definitive care to injured soldiers and the aeromedical evacuation system must remain unencumbered by any other mission requirements. They felt that it was imperative that the 57th remain dedicated solely to the aeromedical evacuation mission which would then insure flexibility to immediately respond when called. BG Stilwell accepted their logic but this was an issue that was not put to rest until 1964.³

A major problem for the 57th during that first year was the fact that they had the only UH-1s in Vietnam creating many maintenance and repair parts problems.⁴ Although no historical records indicate otherwise, it would be my guess that had the 57th been anything other than an aeromedical evacuation unit, the parts and maintenance support would have been available in-country. All in all, it could be stated that 1962 was not a good year for air ambulance operations in Vietnam.

THE EMERGENCE OF DUST-OFF

In February 1963, command of the 57th was passed to Major Lloyd Spencer. One of the first things that he did was develop a tactical call sign for the 57th. For the first year the unit had simply used Army and the last five digits of the aircraft tail number as its call sign. For example, if a pilot were flying a helicopter with the serial number 62-12345, his tactical call

sign would be "Army 12345." Spencer's effort was the beginning in an attempt to build identity, esprit de corps, for air medical evacuation. It was decided that "Dust-Off" best epitomized the 57th's medical evacuation mission. Since the countryside was often dry and dusty, helicopter pickups at field sites often blew dust, dirt, blankets, and shelter halves all over the men on the ground. The soldiers were often referred to as being dusted off when they were being medically evacuated, thus the term dust off became synonymous with aeromedical evacuation. "Dust-Off" became the tactical call sign that remained with Army aeromedical evacuation for the rest of the war.⁶ After the war the "Dust-Off" call sign was coined into the acronym DUSTOFF, meaning dedicated, unhesitating, support, to our fighting forces. This acronym grew out of the heroic exploits of medical evacuation pilots during the war.

During the course of 1963 medical evacuation requests increased substantially, especially for the ARVN because the South Vietnamese had a woefully inadequate medical evacuation system. On a single day in September 1963, the 57th evacuated 197 Vietnamese from the Delta where large Viet Cong forces had virtually destroyed three settlements. As 1963 came to a close, the year had brought important changes to aeromedical evacuation in Vietnam. Dust-Off had a name, solid support from above, a mission and its mission load had substantially increased.⁷

In early 1964 Major Charles Kelly assumed command of the 57th Medical Detachment. It was this courageous legend that

helped forge Dust-Off into full maturity. His skill, daring, aplomb and dedication soon made himself and Dust-Off famous throughout the Delta.⁸ American presence had increased to over 16,000 by this time so there was added opportunity for medical evacuation. BG Stilwell began to once again make overtures toward putting removable red crosses on their helicopters and assigning them general aviation tasks. He was facing increasing general aviation mission requirements and again the 57th was not utilized to full capability. Kelly knew this would be a tragic mistake and he told the men of the 57th that they must prove their worth and by implication the value of dedicated medical helicopters, once and for all.⁹

Proving the courage and valor of the men of Dust-Off as well as the merits of a dedicated medical helicopter to evacuation became a passion with him. Kelly, a veteran of his third war, led the 57th in an aggressive evacuation effort that saw them not merely wait for a call but go out day and night to all the American base camps seeking patients. This clearly illustrates the validity of the argument that DUSTOFF must be free to function independently to meet mission requirements. It simply cannot be relegated to a secondary role without serious mission degradation. The strategy worked and Stilwell again dropped his efforts.¹⁰ The lonely silence of many a distant outpost was broken by Kelly's slow Southern drawl, "This is Dust-Off. Just checking in to see if everything is okay," and on those occasions when there were wounded, here he came hellbent

for leather.¹¹ It was Kelly that pioneered night flying, a feat that was viewed with alarm to be done only in the most extreme emergencies. He flew missions nightly on a routine basis.

On 1 July 1964, Kelly was making an approach into a hot area to pick up wounded only to find the enemy waiting too with a withering barrage of fire. He was advised repeatedly to retire but refused. When a U.S. advisor on the ground gave him a direct order to withdraw Kelly calmly replied, "When I have your wounded."¹² Moments later as he landed he was killed with a single bullet through the heart. This was a clear example that the humanitarian role of DUSTOFF promotes a willingness to take risks over the concern of ones own safety.

THE LEGACY OF DUSTOFF

Kelly was dead but the legacy was only beginning. DUSTOFF became the call sign of all Army aeromedical evacuation missions in Vietnam and "when I have your wounded" became the personal and collective credo of the many gallant medevac pilots who followed him. The issue of who should control medevac was put to rest and never surfaced again throughout the war.¹³

As the build-up of U.S. forces continued, a second medic-1 evacuation helicopter detachment was ordered to Vietnam. The 82d Medical Detachment (Helicopter Ambulance) arrived and was operational in November 1964. The build-up of American forces began to accelerate in 1965 and by 1969 we had 116 air ambulance helicopters there. These were assigned to two companies which

had 25 aircraft each and eleven detachments which had 6 aircraft per detachment.

DUSTOFF pilots were some of the most decorated veterans of the Vietnam War. This is not to suggest that they were any more brave nor any more dedicated to their calling than the infantry, gunship pilots or anyone else during the war. It is simply to suggest that when resources (people and equipment) are organized into units and those units dedicated to a primary humanitarian mission, they will respond with valor. This was a clear fact learned by Letterman in the Civil War and the British during the Crimean War. Bandsmen that were given the secondary mission of performing as stretcher-bearers did abysmally poor. When people could identify with the humanitarian mission of medical evacuation, they respond with courage.

Major Patrick Brady and CWO Michael Novosel epitomized this dedication to humanitarian service in the face of danger as well as anyone in our nation's history. Major Brady was awarded the nations highest medal when he evacuated 51 wounded soldiers in the face of a withering barrage of enemy fire. The feat was all the more remarkable because the weather was so bad that cobra gunship coverage was unable to accompany him on the mission.¹⁴ Again I suggest that this heroic effort was marked by this strong sense of humanitarian service to a fallen comrade in arms. The same may be said of CWO Novosel who at 48, was the oldest American soldier ever to win the Medal of Honor. It was his sense of selfless concern when faced with

danger that was responsible for saving the lives of twenty nine South Vietnamese soldiers.¹⁵ At his Medal of Honor ceremony, Novosel paid the highest tribute to DUSTOFF pilots when he said, "I don't know of any DUSTOFF pilot who wouldn't have done the same thing if he had been in my shoes."¹⁶

The stories of Brady and Novosel are but two of the many examples of bravery and dedication which came to mark the DUSTOFF legacy began Major Charles Kelly in Vietnam. This mission required extraordinary courage and was one of the most dangerous aviation missions in the ten year war. There were approximately fourteen hundred aviators that served as DUSTOFF pilots in the war. Of that number 88 were killed, and 380 were wounded or injured in performing their mission. This was a casualty rate in excess of thirty per cent.¹⁷ Again the point is not that these individuals were any more courageous than anyone else. It is simply that when they are able to identify with a primary mission, history clearly reveals the results.

One of the most dangerous missions performed by the air ambulance crews was the medical hoist rescue mission. The hoist significantly aided medical evacuation rescue operations in areas where terrain or dense jungle foliage precluded the helicopter from landing. The helicopter could hover above the landing site and drop the cable attached to a jungle penetrator or stokes litter and permit rescue of a wounded soldier. This type of operation was extremely hazardous because the helicopter was a sitting duck. Despite the fact that statistics reflected

that hoist missions were seven times more dangerous than the standard medical evacuation mission, over 8,000 were flown, a further testimony to DUSTOFF crews.¹⁸

Certainly one of the most remarkable stories to come out of Vietnam was medical service. The resources that were devoted to the individual soldier's medical needs surpassed any similar effort in man's history. It would be difficult to isolate any one element of the medical team as the primary contributor to this success but DUSTOFF was certainly one of the significant contributors. Air ambulances transported most of the Army's sick, injured and wounded who required rapid movement to a medical facility. Army air ambulances evacuated over 900,000 allied military personnel and Vietnamese civilians. This total includes about 390,000 U.S. Army patients. In addition, of 120,000 U.S. Army soldiers wounded in action that were admitted to hospitals, about 90% were evacuated by DUSTOFF.¹⁹ Although the mortality rate for the wounded did not significantly decrease from the Korean War, there are several important facts to highlight. First it is a well known medical fact that mortality rates can be significantly decreased if surgical intervention can be performed on acutely wounded soldiers within the first hour, known as the golden hour. As a result of the superb DUSTOFF service in Vietnam, thousands of seriously wounded soldiers reached surgical care within this golden hour, thus we had an astonishing 97.5% survival rate for wounded soldiers that reached the hospitals.²⁰ This despite the fact that many of these

casualties were very seriously wounded and would have died in any previous war. The high survival rate for the seriously wounded soldier in Vietnam was both a tribute to the DUSTOFF crews as well as the superbly staffed and equipped hospitals.

What did the DUSTOFF experience of Vietnam mean to the history of medical evacuation? The concepts developed by Major Jonathan Letterman in 1862 - medically controlled ambulances and an orderly chain of evacuation that takes each patient no farther to the rear than necessary are still sound and remain a part of our doctrine. The Vietnam War, essentially, a low intensity conflict guerrilla war, provided us the opportunity to employ sophisticated surgical hospitals wherever we wanted them. This usually meant that DUSTOFF was within a half hour's flight to the nearest hospital, thereby negating the requirement to move the patient through the echelons of medical care established by Letterman. This was only a modification of his original principle, adapted to a specific situation in an undeveloped country and in a war against an enemy with few effective anti-aircraft weapons. In a conventional conflict in a more developed theater, the principles developed by Letterman, through an echelonment of medical care remain sound and a part of current medical support doctrine, currently being revised as Medical Force 2000.

ENDNOTES

1. Dorland and Nanney, p. 23.

2. Ibid., p. 24.
3. Ibid., p. 25.
4. Ibid., p. 27.
5. Ibid., p. 26.
6. Ibid., p. 30.
7. Ibid.
8. Spurgeon H. Neel, "Dustoff--When I Have Your Wounded," United States Army Aviation Digest, May 1974, p. 7.
9. Patrick H. Brady, "When I Have Your Wounded," Army, June 1989, p. 67.
10. Brady, p. 68.
11. Neel, p. 6.
12. Brady, p. 71.
13. Brady, p. 72.
14. Michael J. Scotti, "Out of The Valley of Death," United States Army Aviation Digest, May 1970, p. 14.
15. William H. Smith, "Honor Times 29," United States Army Aviation Digest, January 1974, p. 4.
16. James L. Binder, "Dean of the Dust-Offers," Army, August 1971, p. 20.
17. Dorland and Nanney, p. 116.
18. Spurgeon H. Neel, Vietnam Studies: Medical Support of the U.S. Army in Vietnam 1965-1970, p. 75.
19. Dorland and Nanney, p. 116.
20. Neel, p. 70.

CHAPTER VII

DUSTOFF IS CLEARLY A MEDICAL MISSION

MEDICAL EVACUATION; A MEDICAL PROCESS

The facts support the argument that medical evacuation has evolved into a responsive and effective system since the Civil War by adhering to the principles put forth by Jonathan Letterman. Medical evacuation is a medical process of flexible response and tailored care, not a Quartermaster process of point-to-point delivery. In a Quartermaster process, the most important task is to deliver the cargo to the right unit, at the right place, at the right time. Medical evacuation means not only transporting casualties from one medical echelon to another but, also selecting the wounded for evacuation, providing enroute care, anticipating complications and being ready and capable to perform emergency intervention and make a medical decision concerning continuation of the evacuation.¹ One could argue that a medic could be aboard any helicopter used for evacuation. However, that fails to include the aspects of medical evacuation as a humanitarian endeavor. The voluntary acceptance of risk to help the wounded that goes far beyond the duties of flying freight delivery are special features of medical evacuation aviators.

To place Army aeromedical evacuation assets (DUSTOFF) under the Aviation Branch could potentially jeopardize the primary

mission of those assets. In reviewing the historical development of the evacuation system, we saw that the first concern of tactical commanders has been the tactics of the battle at hand (as it should). Therefore, when the aviation commander has a primary tactical mission his aeromedical evacuation resources could be subordinated, for example, the dedicated DUSTOFF could be used as a logistics/troop transport aircraft part of the time and air ambulance the rest of the time. From the aviation commander's perspective, this competitive mission could very easily become chaotic: the Marine Corps demonstrated this. The Marines, without a dedicated aeromedical helicopter, used logistical helicopters on a backhaul basis to perform medical evacuation missions. Freight-hauling demands exceeded aircraft, however, and evacuation capability suffered during the Tet Offensive when the operational tempo was very high. Then, over 50% of emergency medical evacuation missions were ultimately flown by Army DUSTOFF aircraft. This illustrates what could happen with Army aeromedical evacuation when placed in a situation of competing multiple missions. I do not intend to disparage the intentions of the aviation commanders, merely, to suggest they could be forced into a poor position where the care of wounded troops was a competing mission along with battle sustainment. I suggest that the best solution for the American soldier is to retain the dedicated DUSTOFF as an integral component of the evacuation system controlled by the AMEDD.

It should be pointed out that the Air Force system of

strategic aeromedical evacuation is also a backhaul system. However there are two points that must be made concerning these aircraft. The first is that the aircraft are specially rigged with medical evacuation kits and staffed with medical crewmen before putting patients on-board. The second fact is that strategic aeromedical evacuation is not time sensitive like Army aeromedical evacuation (DUSTOFF) in the combat zone. In strategic aeromedical evacuation the patient is stable and very well prepped for the trip. In DUSTOFF operations, the critical issue is time, the golden hour that I have already alluded to.

The Korean and Vietnam Wars have dramatically shown that air medical evacuation has significantly decreased mortality rates for the injured soldier. The aircraft is equipped with trauma life support equipment and the crew is specifically trained to deal with life support decisions and treatment. Within the Army, the AMEDD has been charged with the responsibility for all medical evacuation regardless of the means, ground or air. The Army recognizes that in order to insure selectivity of evacuation and timeliness of treatment, the medical chain of command must retain control over the evacuation system. I argue that a dedicated, responsive, aeromedical evacuation system is perceived by the soldier as an investment by the Army in his behalf and within the human dimension of combat the unspoken confidence in that rapid evacuation is a tremendous morale booster to the soldier.

As DUSTOFF has emerged to its prominent role today, should

it be controlled by the AMEDD or the Aviation Branch? MG Patrick Brady, Aviation Branch, spoke directly to the subject in 1973 when he was at that time Major Brady, MSC officer. He declared that DUSTOFF must remain under medical command and control. He observed that it was a rare instance when a DUSTOFF pilot exercises his medical training by actually treating a patient, yet that pilot is constantly involved in battlefield triage, monitoring and directing enroute care and most important patient regulation. He reminded critics that retaining DUSTOFF under medical control frees the tactical commander to concentrate on his mission. Brady further states that retaining DUSTOFF under medical control would insure that we will always budget and plan for the requirement of medical evacuation.² I have concluded that his argument is supported by a history that validates the tragic effects of relegating medical evacuation to a secondary mission.

CONCLUSION

The system of evacuation developed by Letterman has served our Army extremely well the past 128 years. The medical evacuation helicopter has become an integral part of the evacuation system and it would be a tragic mistake to separate the air ambulance function from the medical mission. Evacuation, both air and ground, of the sick and wounded, is a vital component of the total field medical support system. It cannot be conducted in an adjunct manner without degrading patient

care. To separate the air/ground evacuation function between two managers, AMEDD and Aviation Branch, and then eliminate one of these resources from the medical system entirely, would adversely affect the optimum management of already scarce medical resources. To separate the air ambulance component of the medical evacuation system and place it under the Aviation Branch is no more logical than removing the ground ambulance from the the medical evacuation system and placing them under the Transportation Corps. History has shown what happens when this occurs, circa Quartermaster Corps in the Civil War. It seems that history has unmistakably shown that the function of medical evacuation only emerged as an effective system when placed under the control of the AMEDD and that DUSTOFF has emerged as a vital component in performing that mission.

Clearly, aeromedical evacuation of the sick and wounded is a medical mission, not a combat arms mission!

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